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IS 8515 (1977): Aluminium Wire for Cold Forged Rivets for Aircraft Purposes (Alloy 19500) [MTD 7: Light Metals and their Alloys]



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“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

**SPECIFICATION FOR
ALUMINIUM WIRE FOR COLD FORGED
RIVETS FOR AIRCRAFT PURPOSES
(ALLOY 19500)**

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**BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002**

Indian Standard

SPECIFICATION FOR ALUMINIUM WIRE FOR COLD FORGED RIVETS FOR AIRCRAFT PURPOSES (ALLOY 19500)

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AMENDMENT NO. 1 JANUARY 1993
TO
IS 8515 : 1977 SPECIFICATION FOR ALUMINIUM
WIRE FOR COLD FORGED RIVETS FOR AIRCRAFT
PURPOSES (ALLOY 19500)

(*Page 3, clause 0.3, Foreword*) — Insert the following additional paragraph after 0.3:

“This standard is one of a series of Indian Standards on aluminium and aluminium alloy wires for cold forged rivets for aircraft purposes. Other standards in this series are the following:

IS 8513 : 1977	Aluminium alloy wire for cold forged rivets for aircraft purposes (alloy 55000)
IS 8514 : 1977	Aluminium alloy wire for cold forged rivets for aircraft purposes (alloy 24530)
IS 8936 : 1977	Aluminium alloy wire for cold forged rivets for aircraft purposes (alloy 24350)
IS 8937 : 1978	Aluminium alloy wire for cold forged rivets for aircraft purposes (alloy 24345)
IS 8938 : 1979	Aluminium alloy wire for cold forged rivets for aircraft purposes (alloy 24345)

With the publication of separate standards for individual alloy wires for manufacturing cold forged rivets, IS 5902 : 1970 'Aluminium and aluminium alloy rivet stock for cold forged rivets for aircraft purposes' has been withdrawn.”

(MTD 7)

Reprography Unit, BIS, New Delhi, India

Indian Standard
**SPECIFICATION FOR
ALUMINIUM WIRE FOR COLD FORGED
RIVETS FOR AIRCRAFT PURPOSES
(ALLOY 19500)**

0. F O R E W O R D

0.1 This Indian Standard was adopted by the Indian Standards Institution on 27 July 1977, after the draft finalized by the Light Metals and Their Alloys Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 Rivets of 99.5 percent purity aluminium are used for aircraft manufacture and hence the necessity was felt for formulation of this standard to cover the requirements of wires for manufacturing rivets.

0.3 In the formulation of this standard assistance has been derived from the following publications:

BS 4L36 Wire for solid, cold-forged rivets of 99.5 percent aluminium. British Standards Institution.

DIN 1747 Bar, rod and wire of aluminium (highest grade aluminium, high grade aluminium and wrought aluminium alloys) strength properties. Deutsches Normenausschusses.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS:2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements of drawn aluminium wire for manufacturing rivets for aircraft purposes.

*Rules for rounding off numerical values (revised).

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2. INSPECTION AND TESTING PROCEDURE

2.1 This standard shall be used in conjunction with IS : 8474-1977*.

3. MATERIAL

3.1 The material shall be made from aluminium with or without approved scrap at the discretion of the manufacturer and shall conform to the chemical composition specified in 5. The wire shall be drawn out of extruded or rolled stock.

4. FREEDOM FROM DEFECTS

4.1 The drawn wires shall be free from harmful defects, such as deep die marks, seams, deep scratches, ovality and transverse surface cracks, tears, etc.

5. CHEMICAL COMPOSITION

5.1 The chemical composition of each cast, when analysed in accordance with IS : 504-1963† shall be as follows:

<i>Element</i>	<i>Percent</i>
Aluminium	99.5 <i>Min</i>
Copper	0.05 <i>Max</i>
Silicon	0.3 <i>Max</i>
Iron	0.4 <i>Max</i>
‡Manganese	0.05 <i>Max</i>
‡Zinc	0.10 <i>Max</i>
Total of copper, silicon, iron, manganese and zinc	0.5 <i>Max</i>

6. CONDITION

6.1 The wires shall be supplied in half hard temper to achieve the tensile strength specified in 7.1.

7. MECHANICAL PROPERTIES

7.1 Tensile Strength — Tensile strength of test specimens selected and

*Procedure for inspection and testing of aluminium and aluminium alloy wires (for rivets) for aircraft purposes.

†Methods of chemical analysis of aluminium and its alloys (*revised*).

‡Subject to the discretion of Inspecting Authority, determination of these elements need be made on a small proportion only of the samples analysed.

prepared in accordance with IS : 8474-1977* shall be not less than 110 N/mm^2 (11 kgf/mm^2)

NOTE — For guidance of the designer, it may be mentioned here that shear strength of the material may be 60 N/mm^2 (6 kgf/mm^2).

7.2 Upsetting Test — Upsetting test shall be carried out in accordance with IS : 8474-1977* on one wire specimen from each coil and the test piece shall not reveal any defect on completion of the test.

7.2.1 The height of the projecting portion of the sample of wire, subjected to upsetting test, shall be 1.5 times the diameter of the wire.

8. TOLERANCES ON DIAMETER

8.1 Tolerances on diameter of the wire shall be in accordance with IS : 8474-1977*.

9. CORROSION PREVENTION

9.1 All coils shall be adequately protected against corrosion by any suitable temporary protective coating such as neutral grease or oil, and packed in water-proof paper and secured properly.

10. IDENTIFICATION

10.1 Each coil, passed by the inspector, shall be tagged with a metal label bearing the mark of the inspector and such other marking as shall ensure full identification of the material.

10.2 Each coil of wire shall be colour coded in accordance with IS : 2479-1969† to the satisfaction of the Inspecting Authority.

11. CERTIFICATION

11.1 All supplies shall be accompanied by certificates for freedom from defects, chemical composition, condition and mechanical properties as laid down in 4, 5, 6 and 7 respectively or as required by the Inspecting Authority.

11.2 The manufacturer shall, when required, supply free of charge a copy of the works analysis of the material. Works analysis is defined as the routine analysis conducted by the manufacturer in order to control the quality of the material.

*Procedure for inspection and testing of aluminium and aluminium alloy wires (for rivets) for aircraft purposes.

†Colour code for identification of aluminium and aluminium alloys for general engineering purposes (*first revision*).

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